

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

In re Patent Application of

Atty Dkt. SCS-540-560

C# M#

Confirmation No. 2005

TC/A.U.: 1743

Examiner: N. Turk

Date: May 5, 2008

HARRIS et al.

Serial No. 10/529,227

Filed: March 25, 2005

Title: CORROSION SENSING MICROSENSORS



1/FWAF/\$\$

Mail Stop Appeal Brief - Patents

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

☐ **Correspondence Address Indication Form Attached.**

☐ **NOTICE OF APPEAL**

Applicant hereby **appeals** to the Board of Patent Appeals and Interferences
from the last decision of the Examiner twice/finally rejecting
applicant's claim(s).

\$510.00 (1401)/\$255.00 (2401) \$

☒ An appeal **BRIEF** is attached in the pending appeal of the
above-identified application

\$510.00 (1402)/\$255.00 (2402) \$ 10.00

**(\$500 Appeal Brief fee previously paid June 7, 2007, without
decision on merit)**

☐ Credit for fees paid in prior appeal without decision on merits

-\$ ()

☐ A reply brief is attached.

(no fee)

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☐ **CREDIT CARD PAYMENT FORM ATTACHED.**

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension.
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asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this
firm) to our **Account No. 14-1140**. A duplicate copy of this sheet is attached.

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NIXON & VANDERHYE P.C.
By Atty: Stanley C. Spooner, Reg. No. 27,893

Signature: _____



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For: CORROSION SENSING MICROSENSORS

APPEAL BRIEF

On Appeal From Group Art Unit 1743

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APPEAL BRIEF

Sir:

I. REAL PARTY IN INTEREST 05/05/2008 SZEDD1E1 00000077 10529227
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The real party in interest in the above-identified appeal is BAE SYSTEMS plc by virtue of an assignment of rights from the inventors to BAE SYSTEMS plc recorded on March 25, 2005 at Reel 17051, Frame 857.

II. RELATED APPEALS AND INTERFERENCES

A previous Notice of Appeal and Pre-Appeal Brief Request for Review was filed in this application on March 7, 2007 which was denied in the Panel decision of April 5, 2007 (withdrawing the §102 rejection of claims 1-5 and 7) requiring

Adjustment date: 05/05/2008 SZEDD1E1
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appellant to file an Appeal Brief. The Appeal Brief was filed on June 7, 2007 whereupon the Examiner reopened prosecution in the non-final Office Action mailed October 16, 2007. A further Notice of Appeal and Pre-Appeal Brief Request for Review was filed March 7, 2008 and again denied in the Panel decision on March 25, 2008. There are believed to be no other related appeals, interferences or judicial proceedings with respect to the present application.

III. STATUS OF CLAIMS

Claims 1-22 stand rejected in the third and non-final Official Action mailed October 16, 2007. The Examiner contends that claims 1-7 are rejected under 35 USC §103(a) as being obvious over Kim (U.S. Patent 6,383,451) in view of Ansuini (U.S. Patent 4,780,664) and that claims 8-22 are obvious over the Kim/Ansuini combination in view of various tertiary references, Kordecki (EP 0932037), Agarwala (U.S. Patent 5,338,432), Glass '773 (U.S. Patent 5,437,773), and Glass '859 (U.S. Patent 5,409,859) in various combinations. The above rejections of claims 1-22 are appealed.

IV. STATUS OF AMENDMENTS

No further response has been submitted with respect to the third and non-final Official Action in this application other than the filing of a second Pre-

Appeal Brief Request for Review, which “Notice of Panel Decision” was mailed March 25, 2008.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Appellants' specification and figures provide an explanation of the claimed invention set out in independent claim 1, with each claimed structure addressed as to its location in the specification and in the figures.

“1. A microsensor for detecting corrosive media acting on a metallic material when mounted in situ adjacent a location in the metallic material, the microsensor including:

at least two common terminals [elements 8, 10 shown in Figure 1 and discussed on page 4, lines 9-26 and elsewhere in the specification]; and

a plurality of corrosive tracks [elements 16 shown in Figure 1 and discussed on page 4, lines 21-26 and elsewhere in the specification], each of the tracks electrically connecting said at least two common terminals, exposed to the corrosive media and comprising a patterned conductive thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends.”

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-7 stand rejected under 35 USC §103 as unpatentable over Kim in view of Ansuini.

Claims 8-10 stand rejected under 35 USC §103 as unpatentable over the Kim/Ansuini combination in view of Kordecki.

Claims 11 and 12 stand rejected under 35 USC §103 as unpatentable over the Kim/Ansuini combination in view of Agarwala.

Claims 13-15 stand rejected under 35 USC §103 as unpatentable over the Kim/Ansuini combination in view of Glass '773.

Claims 16-20 stand rejected under 35 USC §103 as unpatentable over the Kim/Ansuini combination in view of Glass '773 in further view of Kordecki.

Claim 21 and 22 stand rejected under 35 USC §103 as unpatentable over the Kim/Ansuini combination in view of Glass '773 and in view of Glass '859.

VII. ARGUMENT

Appellants' arguments include the fact that the burden is on the Examiner to first and foremost properly construe the language of the claims to determine what structure and/or method steps are covered by that claim. After proper construction of the claim language, the burden is also on the Examiner to demonstrate where a plurality of references (in the case of an obviousness

rejection) teaches each of the structures and/or method steps recited in independent claim 1.

Furthermore, the Court of Appeals for the Federal Circuit has stated in the case of *In re Rouffet*, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998)

to prevent the use of hindsight based on the invention to defeat patentability of the invention, this court **requires** the examiner to show a **motivation** to combine the references that create the case of obviousness. In other words, the Examiner **must show reasons** that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. (Emphasis added).

A. The Examiner fails to demonstrate where Kim teaches “a plurality of corrosive tracks” where each track is comprised of a “thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends”

In the rejection of claims 1-7 under 35 USC §103, beginning on page 3 of the third and non-final Official Action, the Examiner discusses but fails to allege where or how the Kim reference discloses the subject matter of claims 1 and 7.

Specifically, the Examiner fails to indicate where Kim contains any teaching of the “plurality of corrosive tracks” where each track comprises “a patterned conductive thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends.” This omission on the Examiner’s part was

noted in the previously filed Appeal Brief (paragraph bridging pages 5-6) and has never been responded to by the Examiner.

Specifically, the Examiner is reminded that the Court of Appeals for the Federal Circuit has held that “the PTO has the burden under Section 103 to establish a *prima facie* case of obviousness.” *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). “It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.”

The Examiner fails to indicate where or how the Kim reference teaches the claimed “patterned conductive thin film track” and the recited “path.” The only reference to this portion of the claim in the third non-final action is the “corrosive tracks 41” in the Kim reference. However, as clearly illustrated in Kim’s Figure 1, these tracks do not have “mutually inverted generally U-shaped bends.” Thus this limitation in claim 1 is not taught or suggested in the Kim reference and indeed is not alleged to be taught in Kim by the Examiner.

Additionally, the Examiner now admits that “Kim does not disclose each bend has a minimum radius of curvature, which is greater than half the average width of the corrosive tracks” (page 3, last two lines). This admission with respect to the additional limitation of dependent claim 7 is also appreciated.

Clearly, no portion of the Kim reference has been identified by or even alleged by the Examiner as teaching the elements recited above in claim 1 and claim 7.

B. The Examiner fails to appreciate that Kim teaches away from Appellants' claimed "plurality of corrosive tracks" which comprise a "patterned conductive thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends"

As can be seen by reviewing Figures 1 and 5 and the accompanying descriptions in the Kim reference, the only disclosure of metal thin film material used for corrosion rate measurement are the "thin lines 41" which are straight lines. (Kim, column 2, lines 47-50). Thus, Kim, instead of teaching the claimed plurality of corrosive tracks with the "generally U-shaped bends," actually teaches that it is preferable to use straight lines and thus would lead one of ordinary skill in the art away from the claim 1 embodiment.

The Federal Circuit has opined that it is "error to find obviousness where references 'diverge from and teach away from the invention at hand'." *Id.* As a result, the teachings in the Kim reference (apparently ignored by the Examiner) would specifically lead one of ordinary skill in the art away from Appellants' claimed "U-shaped bends" in the plurality of corrosion tracks.

The fact that Kim teaches away from the claim 1 limitation of "bends" was discussed in the previously filed Appeal Brief (in Section B, pages 6-7) and has not been supplemented or explained in the third non-final official action.

C. The Examiner fails to demonstrate where Ansuini teaches “a plurality of corrosive tracks” where each track is comprised of a “thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends”

As noted above in Section A, the burden is on the Examiner to establish where the cited prior art reference comprises an “objective teaching” in the prior art of the claimed subject matter. Just as with the Kim reference, the Ansuini reference fails to teach “a plurality of corrosive tracks” which connect “said at least two common terminals” in which each track is comprised of “a plurality of mutually inverted generally U-shaped bends.”

At best, while Ansuini teaches “bends”, it teaches only a single track between a pair of two terminals (either single track 66 between terminals 62 and 70 or track 86 between terminals 82 and 90) and thus fails to teach the claimed “plurality of corrosive tracks . . . mutually inverted generally U-shaped bends” which connect two terminals.

The third and non-final Official Action fails to address the missing structure which was clearly pointed out in the previously filed Appeal Brief (Section C, pages 7-8).

Because the Examiner has failed to meet his burden of establishing where the Ansuini reference teaches this claimed plurality of elements, it cannot support any rejection under 35 USC §103.

D. The Examiner fails to appreciate that Ansuini teaches away from “a plurality of corrosive tracks” where each track is comprised of a “thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends”

As noted above, the Ansuini reference teaches terminals 60 and 70 which have only a single track 66 connected therebetween. Thus, the teaching of a single track would lead one of ordinary skill in the art away from the claimed element of a “plurality of corrosive tracks” connecting the terminals as recited in claim 1. In spite of this issue being specifically raised in the previously filed Appeal Brief (Section D, page 8), the Examiner ignores the claim language and does not consider why it would be obvious to disregard the specific teaching of the Ansuini patent.

Ansuini would only lead one of ordinary skill in the art to have a single corrosive track and would lead away from the claimed invention.

E. The Examiner provides no basis for a rejection of claim 1 or any claims dependent thereon under 35 USC §103 as being unpatentable over Kim in view of Ansuini

Because all claims in this application depend from claim 1, if claim 1 is patentable, all remaining claims must be patentable. Therefore, Appellants will direct the Board’s attention to the rejection of independent claim 1. The only basis upon which claim 1 is rejected is under 35 USC §103 as unpatentable over only the Kim reference in view of the Ansuini reference. Furthermore, in order to

avoid repetition, Appellants will refer to the above sections and incorporate the substance of the material therein by reference. It is noted that the previously filed Appeal Brief specifically address the following issues and the third and non-final official action does not address those previously raised issues.

1. The Examiner fails to appreciate that even the combination of the Kim and Ansuini references fail to teach Appellants' claimed combination of "at least two common terminals" and "a plurality of corrosive tracks" each of which track includes "a plurality of mutually inverted generally U-shaped bends"

As noted in Section A above, the Examiner fails to demonstrate where the Kim reference teaches the claimed subject matter of "at least two common terminals" which are connected by "a plurality of corrosive tracks" wherein "each of the tracks" follows a path which includes "a plurality of mutually inverted generally U-shaped bends." (quotes from independent claim 1).

In Section C above, the Examiner fails to indicate where the Ansuini reference teaches this same claimed subject matter, i.e., two terminals which are connected by a plurality of tracks with "bends."

As a result, neither the Kim nor Ansuini reference teach a recited element of Appellants' claimed microsensor, i.e., the "plurality of corrosive tracks" in which each track follows "a path which includes a plurality of mutually inverted generally U-shaped bends." Even if Kim and Ansuini were combined, they would not disclose all claimed elements as required by the Federal Circuit in order to

establish a *prima facie* case of obviousness. This issue was previously raised in the previously filed Appeal Brief (page 9) and has not been addressed in the third and non-final Office Action.

In view of the fact that the burden is clearly on the Examiner to point out where the prior art teaches the claimed subject matter and in view of Sections A and C above, the fact that neither Kim nor Ansuini teach at least the second element recited in Appellants' independent claim 1, even if the references were combined, they cannot disclose the subject matter of claim 1 or claims dependent thereon.

Therefore, in view of the above, the Examiner has simply failed to meet his burden of proving that the subject matter of claim 1 was contained in at least one of the Kim and Ansuini references and the rejection fails.

2. The Examiner fails to articulate or identify any “reason” or “motivation” for combining the Kim and Ansuini references

It is also apparent that neither of the Kim nor Ansuini references contain any “reason” or “motivation” for combining the teachings therein, even assuming that one of the references taught the claimed “plurality of corrosive tracks” with “a plurality of mutually inverted generally U-shaped bends.” (which as noted above, they do not).

As noted in *In re Rouffet* above, it is not sufficient for the Examiner to identify that the claimed “at least two common terminals” and the claimed

“plurality of corrosive tracks” each track with “a plurality of mutually inverted generally U-shaped bends” are disclosed in separate references – there must also be some “reason” or “motivation” to combine these references. This requirement of some “reason” for combining references was recently confirmed in a Memorandum dated May 3, 2007 by the Deputy Commissioner for Patent Operations, Margaret A. Focarino, when she stated that “in formulating a rejection under 35 USC §103(a) based upon a combination of prior art elements, it remains necessary to identify the reasons why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed.”

The Examiner, in the portion of page 4 of the third and non-final Office Action which addresses the obviousness rejection of claims 1-7, suggests that it would be obvious to modify the Kim device in the manner of Ansuini “in order to provide a corrosive track configuration which saves space.” However, this allegation of “obvious” does not address the fact that neither Kim nor Ansuini teach the two claimed elements, i.e., the “at least two common terminals” and the “plurality of corrosive tracks,” each track having the “plurality of mutually inverted generally U-shaped bends.”

Moreover, the Examiner’s “reason,” at least as expressed on page 4, seems to relate to combining the disclosures in the Kim and Ansuini references to support a rejection of the feature in dependent claim 6 relating to a “minimum radius of curvature” and not the independent claim 1.

Again, because the burden is on the Examiner to establish some “reason” or “motivation” for combining references and the fact that the Examiner fails to meet this burden, there is no *prima facie* case of obviousness of independent claim 1 or claims dependent thereon under the provisions of 35 USC §103 and any further rejection thereunder is respectfully traversed. As these issues were previously raised and not responded to in the third and non-final Office Action, the Examiner is believed to have waived any further argument in the matter.

3. The Examiner fails to appreciate that both Kim and Ansuini teach away from Appellants’ claimed combination of elements

As noted in Section B above, the Kim reference actually teaches away from the claimed “plurality of corrosive tracks . . . following a path which includes a plurality of mutually inverted generally U-shaped bends” and instead teaches straight line paths. As noted in Section D above, the Ansuini reference clearly teaches away from the claimed “plurality of corrosive tracks, each of the tracks electrically connecting said at least two common terminals . . .” and instead teaches only a single path between the two terminals.

As is well settled, the Court of Appeals for the Federal Circuit has consistently held that it is “error to find obviousness where references ‘diverge from and teaching away from the invention at hand’.” *In re Fine*, at 1599. Even if only one of the Kim or Ansuini references taught away from the combination, that would destroy the Examiner’s case for obviousness. However, as demonstrated

above, both Kim and Ansuini teach away from the claimed combination of elements, with Kim teaching straight line interconnections between the two common terminals and Ansuini teaching only a single conductive thin film track interconnecting the terminals. The Examiner fails to indicate how or why one of ordinary skill in the art would disregard the Kim teaching of straight line interconnections and disregard the Ansuini teaching of only one interconnection and combine the references in the manner of claim 1.

Quite clearly, because both references teach away from the claimed subject matter, the claim 1 invention is clearly non-obvious in view thereof. Thus, because claim 1 is clearly patentable over the Kim and Ansuini combination, any further rejection of claim 1 or claims 2-22 dependent thereon is completely unsupported in the outstanding third and non-final Office Action.

VIII. CONCLUSION

As demonstrated above, both the Kim and Ansuini references fail to teach Appellants' claimed "plurality of corrosive tracks" interconnecting at least two terminals where the tracks have the recited "bends." In fact, each of the references specifically "teach away" from the combination specified in Appellants' independent claim 1. The Examiner has failed to demonstrate that a literal combination of the Kim and Ansuini references discloses all claimed structures and therefore the rejection fails. The rejection also fails because the Examiner has

failed to comply with Federal Circuit and MPEP requirements that he identify some “reason” or “motivation” for combining references and thus has failed to meet his burden of establishing a *prima facie* basis of obviousness. Finally, the Examiner has ignored the fact that not one, but both references would lead one of ordinary skill in the art away from the claimed combination, thereby evidencing the non-obviousness of the claimed invention.

It is also noted that, the Examiner’s reopening of prosecution after the filing of the first Appeal Brief has only delayed consideration of the merits of the Examiner’s rejections by the Board, but has not substantively responded to any issues raised in the two previously filed Pre-Appeal Brief Requests for Review or in the previously filed Appeal Brief. It is respectfully requested that the Examiner no reopen prosecution again and, instead, issue an Examiner’s Answer which responds to the errors in the third and non-final Office Action as noted above.

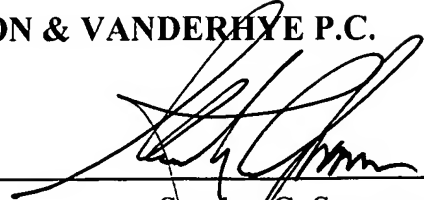
As a result of the above, there is simply no support for the rejections of Appellants' independent claim 1 or claims dependent thereon under 35 USC §103. Thus, and in view of the above, the rejection of claims 1-22 under 35 USC §103 is clearly in error and reversal thereof by this Honorable Board is respectfully requested.

HARRIS et al
Serial No. 10/529,227

Respectfully submitted,

NIXON & VANDERHYTE P.C.

By: _____



Stanley C. Spooner
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SCS:kmm
Enclosure

IX. CLAIMS APPENDIX

1. (currently amended) A microsensor for detecting corrosive media acting on a metallic material when mounted in situ adjacent a location in the metallic material, the microsensor including:

at least two common terminals; and

a plurality of corrosive tracks, each of the tracks electrically connecting said at least two common terminals, exposed to the corrosive media and comprising a patterned conductive thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends.

2. (original) A microsensor according to claim 1, wherein each said corrosive track has a width which is substantially constant across its length.

3. (previously presented) A microsensor according to claim 1, wherein each said corrosive track is formed to meander across a surface portion of a common substrate.

4. (original) A microsensor according to claim 3, wherein each said surface portion comprises one of a set of linear corridors on the common substrate.

5. (previously presented) A microsensor according to claim 1, wherein the minimum separation between adjacent corrosive tracks is preferably at least as great as the average width of said corrosive tracks.

6. (previously presented) A microsensor according to claim 1 wherein each said bend has a minimum radius of curvature which is greater than half the average width of said corrosive tracks.

7. (previously presented) A microsensor according to claim 1, comprising a resistivity sensor having said plurality of corrosive tracks arranged to provide a measurable variation in resistivity in response to prolonged exposure to corrosive media.

8. (original) A microsensor according to claim 7, comprising a reference sensor arranged to provide a measurable variation in resistivity in response to changes in temperature, the reference sensor having a similar temperature dependence as said resistivity sensor.

9. (original) A microsensor according to claim 8, wherein the reference sensor takes substantially the same form as said resistivity sensor.

10. (previously presented) A microsensor according to claim 8, wherein said reference sensor is formed in an overlapping arrangement with said resistivity sensor.

11. (previously presented) A microsensor according to claim 1, comprising a galvanic sensor having at least one said corrosive track made of a first metallic material and at least one further thin film track made of a second, different, metallic material, the tracks being arranged to provide a measurable variation in galvanic voltage in response to exposure to an electrolyte.

12. (original) A microsensor according to claim 11, wherein the galvanic sensor comprises a plurality of said corrosive tracks and a plurality of said further tracks, arranged in an interdigitated pattern.

13. (original) A microsensor according to claim 1, comprising a resistance thermometer sensor, a platinum resistance thermometer for example, arranged for measuring a temperature in the area in which the microsensor is mounted.

14. (original) A microsensor according to claim 1, wherein the corrosive tracks are made of a metallic alloy.

15. (original) A microsensor according to claim 14, wherein at least one corrosive tracks are made of an aluminium alloy.

16. (previously presented) Apparatus comprising a metallic component made from a metallic alloy in bulk form and a microsensor according to claim 14 mounted in situ adjacent a location in the component for detecting corrosive media acting on the bulk alloy, the bulk alloy having a main metal constituent which is the same as the main metal constituent of the track alloy, and at least one alloying metal constituent which is the same as the alloying metal constituent of the track alloy.

17. (original) Apparatus according to claim 16, wherein the proportion of the alloying constituent in the track alloy is similar to the proportion of the alloying constituent of the bulk alloy, to within 3% of the total constituents of the bulk alloy.

18. (original) Apparatus according to claim 16, wherein the proportion of the alloying constituent in the track alloy is similar to the proportion of the alloying constituent of the bulk alloy, to within 1% of the total constituents of the bulk alloy.

19. (previously presented) Apparatus according to claim 16, further comprising a second metallic component made from a different metallic alloy in bulk form and a second microsensor mounted in situ adjacent a separate location, which is in the second component, for detecting corrosive media acting on the different bulk alloy, the different bulk alloy having a main metal constituent and at least one alloying metal constituent, the second microsensor having at least one thin film track made from a metallic alloy which is different to the metallic alloy from which the at least one track of the first-mentioned microsensor is made and having a main metal constituent which is the same as the main metal constituent of the different bulk metallic alloy, and at least one alloying metal constituent which is the same as the main alloying metal constituent of the different bulk metallic alloy.

20. (previously presented) An aircraft including apparatus according to claim 16.

21. (previously presented) A method of manufacture of a microsensor according claim 14, comprising depositing the alloy of said at least one thin film track onto a substrate to form a thin film and annealing the thin film to encourage metallic grain growth.

22. (original) A method according to claim 21, wherein the depositing step comprises sputtering the alloy of the said at least one thin film track onto the substrate.

X. EVIDENCE APPENDIX

None.

XI. RELATED PROCEEDINGS APPENDIX

None.